

WE CLAIM:

1. An edible, ink-jettable ink composition comprising:

- (a) a food grade white pigment;
- (b) a dispersant;
- (c) an alcohol; and
- (d) water

wherein said ink composition is ink-jettable through a drop-on-demand ink jet system.

2. An edible ink formulation according to claim 1, wherein said ink is capable of forming an image having a resolution greater than 200 dpi using a single printhead and single pass printing.

3. An edible ink composition according to claim 1, wherein said food grade white pigment is titanium dioxide.

4. An edible ink composition according to claim 1, wherein said dispersant is glycerine.

5. The composition according to claim 1, further comprising a dye.

6. The composition according to claim 1, further comprising a surfactant.

7. The composition according to claim 6, wherein said surfactant is selected from the group consisting

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of polyglycerol oleates, monostearates, polysorbates, mono and diglycerides.

8. The composition of claim 3, wherein said ink is substantially free of binder.

9. The composition of claim 3, wherein said dispersant is substantially free of glycerine.

10. The composition of claim 3, wherein said dispersant is a carbohydrate syrup.

11. A food-grade, ink-jettable ink composition consisting essentially of: titanium dioxide, a dispersant, a lower alcohol, water, and optionally a surfactant.

12. The food-grade, drop-on-demand ink-jettable ink composition of claim 11, consisting essentially of about 10 to about 45 percent by weight titanium dioxide; about 1 to about 48 percent by weight dispersant; about 5 to about 70 percent by weight ethanol; about 30 to about 75 percent by weight deionized water and less than about 1 weight percent surfactant.

13. A process for printing high resolution images on an edible substrate comprising the steps of:

- (a) providing digital image information;
- (b) processing said digital image information to prepare processed digital image information; and

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(c) printing an image from said processed digital image information on an edible substrate with an ink-jet printer using a dispersed pigment food-grade ink to obtain a printed image having resolution greater than 200 dpi even if printed using a single printhead and single pass printing.

14. A process according to claim 13, wherein said step of printing comprises printing with a drop-on-demand ink jet printer.

15. A process according to claim 14 wherein said printed image has a resolution between 300 and 1200 dpi.

16. A process according to claim 14, wherein said dispersed pigment food-grade ink comprises:

- (a) a food grade white pigment;
- (b) dispersant;
- (c) an alcohol; and
- (d) water.

17. The process according to claim 13, wherein said step of providing digital image information comprises inputting an image from a keyboard, a digital camera, a scanner, a digital video camera, or pre-recorded image format.

18. The process according to claim 14 further comprising the step of applying a coating of surfactant, glaze, binder or combinations thereof to said edible substrate prior to said step of printing,

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said coating applied in an amount effective to improve the compatibility of the substrate with the ink.

19. The process according to claim 13, wherein said step of processing said image comprises resolving the image into a series of image layers, and wherein said step of printing includes printing said image layers in multiple passes to improve the resolution of said printed image.

20. The process of claim 13, further comprising drying or fixing the image after said printing step.

21. The process of claim 13, wherein said edible is dark chocolate, milk chocolate, white chocolate, a sugar shell product, hard candy, ice cream, or pet snack.

22. A system for preparing edibles having high-resolution, consumer-selected, dispersed pigmented ink images printed thereon with an ink-jet printer, comprising:

a digital image information selection device in communication with an image processor for producing processed digital image information; and

an ink-jet printer adapted to print a high resolution image corresponding to said processed digital image information on an edible substrate.

23. The system of claim 22, wherein said ink-jet printer is a drop on demand ink-jet printer.

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24. The system of claim 23, wherein said drop-on-demand ink-jet printer comprises a reservoir adapted to contain an ink comprising food grade white pigment, dispersant, an alcohol, and water.

25. The system of claim 22, wherein said ink-jet printer, said image processor, and said digital image information selection device are interconnected by computer.

26. The system of claim 22, wherein said digital image information selection device or said image processor are available to a consumer on-line.

27. The system of claim 22, wherein said ink-jet printer, image processor and digital image information selection device are integrated into a portable apparatus.

28. A customizable process for preparing edibles having high resolution images that have been selected by a consumer ink-jet printed thereon, comprising the steps of:

selecting digital image information;

processing said digital image information to form processed digital image information;

ink-jet printing an image corresponding to said information using dispersed pigmented ink;

wherein said step of selecting digital image information is performed by an individual consumer.

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29. A customizable process for preparing edibles according to claim 28, wherein said step of selecting digital image information is performed by the individual consumer at a site, and where the step of ink-jet printing is performed at the same site.

30. A customizable process for preparing edibles according to claim 28, wherein said step of ink-jet printing is performed with a drop-on-demand ink-jet printer using a dispersed pigment food grade ink comprising: food grade white pigment, glycerine, an alcohol, and water, and not having a binder.

31. A system for enabling a user to submit an image to be printed on an edible, comprising:

a first computer adapted to receive image data from the user and communicate the image data over a network;

a second computer, adapted to communicate with the first computer, the second computer being adapted to receive the transmitted image data over the network; and

an ink-jet printer adapted to receive the image data from the second computer and print on the edible a high quality image that corresponds to the received image data.

32. A system according to Claim 31, wherein the network is the Internet and the first computer is a client computer operable to run Web browser software adapted to send and receive Hypertext Markup Language (HTML) forms over the World Wide Web.

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33. A system according to Claim 31, wherein the network is a local area network.

34. A system according to Claim 31, wherein the ink-jet printer prints on an edible substrate using a dispersed pigment food-grade ink to obtain a printed image having resolution greater than 200 dpi even if printed using a single printhead and single pass printing.

35. A system according to Claim 34, wherein the ink-jet printer is a drop-on-demand ink-jet printer.

36. A system according to Claim 34, wherein the printed image has a resolution between 300 and 1200 dpi.

37. A method for use on a system for enabling a user to submit an image to be printed on an edible, the system including a first computer, a second computer structured to communicate over a network with the first computer, and an ink-jet printer, structured to communicate with the second computer, the method comprising:

(a) the first computer receiving image data from the user and communicating the image data over a network to the second computer;

(b) the second computer receiving the communicated image data over the network from the first computer; and

(c) the ink-jet printer receiving the image data from the second computer and printing on the edible a

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high quality image that corresponds to the received image data.

38. A method according to Claim 37, wherein the network is the Internet and the first computer is a client computer, step (a) being executed by operations of Web browser software operating on the first computer and adapted to send and receive Hypertext Markup Language (HTML) forms to and from the second computer over the World Wide Web.

39. A method according to Claim 37, wherein the network is a local area network.

40. A method according to Claim 37, wherein in step (c) the ink-jet printer prints on an edible substrate using a dispersed pigment food-grade ink to obtain a printed image having resolution greater than 200 dpi even if printed using a single printhead and single pass printing.

41. A method according to Claim 40, wherein the ink-jet printer is a drop-on-demand ink-jet printer.

42. A method according to Claim 40, wherein the printed image has a resolution between 300 and 1200 dpi.

43. A system for enabling a user to submit, over the Internet, an image to be printed on an edible, comprising:

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a client computer adapted to receive image data from the user and communicate the image data over the Internet;

a server computer, adapted to communicate with the client computer, the server computer being adapted to receive the transmitted image data over the Internet; and

an ink-jet printer adapted to receive the image data from the server computer and print on the edible a high quality image that corresponds to the received image data.

44. A system according to Claim 43, wherein the client computer is operable to run Web browser software adapted to send and receive Hypertext Markup Language (HTML) forms over the World Wide Web.

45. A system according to Claim 43, wherein the ink-jet printer prints on an edible substrate using a dispersed pigment food-grade ink to obtain a printed image having resolution greater than 200 dpi even if printed using a single printhead and single pass printing.

46. A system according to Claim 45, wherein the ink-jet printer is a drop-on-demand ink-jet printer.

47. A system according to Claim 43, wherein the printed image has a resolution between 300 and 1200 dpi.

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48. A system for custom manufacturing a decorated edible item on the basis of instructions of a user, the system comprising:

a server computer adapted to:

communicate over a network with a client computer of the user,

receive over the network, from the client computer, image information submitted to the client computer by the user, and

communicate the received image information to an ink-jet printer to cause printing on the edible item of a high quality image that corresponds with the received image information.

49. A system according to Claim 48, wherein the network is the Internet and the client computer is operable to run Web browser software adapted to send and receive Hypertext Markup Language (HTML) forms over the World Wide Web.

50. A system according to Claim 48, wherein the network is a local area network.

51. A system according to Claim 48, wherein the ink-jet printer prints on an edible substrate using a dispersed pigment food-grade ink to obtain a printed image having resolution greater than 200 dpi even if printed using a single printhead and single pass printing.

52. A system according to Claim 51, wherein the ink-jet printer is a drop-on-demand ink-jet printer.

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53. A system according to Claim 51, wherein the printed image has a resolution between 300 and 1200 dpi.

54. A method on a server computer on a network for facilitating custom manufacturing of a decorated edible item on the basis of instructions of a user, the method comprising:

communicating over the network with a client computer of the user,

receiving over the network, from the client computer, image information submitted to the client computer by the user, and

communicating the received image information to an ink-jet printer to cause printing on an edible item of a high quality image that corresponds with the received image information.

55. A method according to Claim 54, wherein the network is the Internet and the client computer is operable to run Web browser software adapted to send and receive Hypertext Markup Language (HTML) forms over the World Wide Web.

56. A method according to Claim 54, wherein the network is a local area network.

57. A method according to Claim 54, wherein the ink-jet printer prints on an edible substrate using a dispersed pigment food-grade ink to obtain a printed image having resolution greater than 200 dpi even if

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printed using a single printhead and single pass printing.

58. A method according to Claim 57, wherein the ink-jet printer is a drop-on-demand ink-jet printer.

59. A method according to Claim 57, wherein the printed image has a resolution between 300 and 1200 dpi.

60. A computer-readable medium storing executable code adapted to control a server computer on a network to perform a method for facilitating custom manufacturing of a decorated edible item on the basis of instructions of a user, the method comprising:

communicating over the network with a client computer of the user,

receiving over the network, from the client computer, image information submitted to the client computer by the user, and

communicating the received image information to an ink-jet printer to cause printing on an edible item of a high quality image that corresponds with the received image information.

61. A computer-readable medium according to Claim 60, wherein the network is the Internet and the client computer is operable to run Web browser software adapted to send and receive Hypertext Markup Language (HTML) forms over the World Wide Web.

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62. A computer-readable medium according to Claim 60, wherein the network is a local area network.

63. A computer-readable medium according to Claim 60, wherein the ink-jet printer prints on an edible substrate using a dispersed pigment food-grade ink to obtain a printed image having resolution greater than 200 dpi even if printed using a single printhead and single pass printing.

64. A computer-readable medium according to Claim 63, wherein the ink-jet printer is a drop-on-demand ink-jet printer.

65. A computer-readable medium according to Claim 63, wherein the printed image has a resolution between 300 and 1200.

66. A edible product comprising a high resolution image printed on at least one surface of an edible substrate having localized three dimensional features, wherein the image is printed with drop on demand ink-jet technology.

67. The edible product of claim 66 wherein the high resolution image has a resolution greater than 200 dpi.

68. The edible product of claim 66 wherein the high resolution image has a resolution between 300 dpi and 1200 dpi.

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69. The edible product of claim 66 wherein the edible substrate is dark chocolate, milk chocolate, white chocolate, a sugar shell product, hard candy, or ice cream.

70. The edible product of claim 66 wherein the edible substrate has a coating of surfactant applied to said at least one surface and said high resolution image is printed onto said coating of surfactant.

71. The edible product of claim 66 wherein the edible substrate is substantially planar in shape.

72. The edible product of claim 66 wherein the edible substrate is substantially non-planar in shape.

73. The edible product of claim 66 wherein said high resolution image is printed onto said at least one surface and said at least one surface is non-planar.

74. An edible product produced by the method of claim 13 comprising a high resolution image printed on at least one surface of an edible substrate wherein the image is printed with drop on demand ink-jet technology.

75. The edible product of claim 74 wherein the high resolution image has a resolution greater than 200 dpi.

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76. The edible product of claim 74 wherein the high resolution image has a resolution between 300 dpi and 1200 dpi.

77. The edible product of claim 74 wherein the edible substrate is dark chocolate, milk chocolate, white chocolate, a sugar shell product, hard candy, ice cream, or pet snack.

78. The edible product of claim 74 wherein the edible substrate has a coating of surfactant, glaze, binder or combination thereof, on said at least one surface and said high resolution image is printed onto said coated surface.

79. The edible product of claim 74 wherein the edible substrate is substantially planar in shape.

80. The edible product of claim 74 wherein the edible substrate is substantially non-planar in shape.

81. The edible product of claim 74 wherein said high resolution image is printed onto said at least one surface and said at least one surface is non-planar.

82. An edible, ink-jettable ink composition comprising:

- (a) a food-grade white pigment;
- (b) a dispersant; and
- (c) an alcohol;

wherein said composition is substantially free of water.

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